

Claim Amendments

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims

Claim 1. (Currently Amended) A polyurethane (A) prepared from reactants comprising:

- a) at least one organic diisocyanate or polyisocyanate,
- b) at least one compound comprising at least one isocyanate-reactive group and at least one free radically polymerizable unsaturated group and/or cationically polymerizable group,
- c) at least one compound comprising at least one isocyanate-reactive group and at least one capped amino group and having a molecular weight below 1000 g/mol,
- d) if desired optionally, at least one compound comprising at least one isocyanate-reactive group and at least one actively dispersing group,
- e) if desired optionally, at least one compound comprising at least two isocyanate-reactive groups, and
- f) if desired optionally, compounds other than a) to d) comprising at least one isocyanate-reactive group, the allophanate fraction being 5 to 65 mol % based on the lowest molecular weight allophanate molecule.

Claim 2. (Currently Amended) A polyurethane (A) prepared from reactants comprising:

- a) at least one organic diisocyanate or polyisocyanate,

- b) at least one compound comprising at least one isocyanate-reactive group and at least one free radically polymerizable unsaturated group and/or cationically polymerizable group,
- c) at least one compound comprising at least one isocyanate-reactive group and at least one capped amino group and having a molecular weight below 1000 g/mol,
- d) 1-30 mol % of at least one compound comprising at least one isocyanate-reactive group and at least one actively dispersing group,
- e) ~~if desired optionally~~, at least one compound comprising at least two isocyanate-reactive groups, and
- f) ~~if desired optionally~~, compounds other than a) to d) comprising at least one isocyanate-reactive group

Claim 3. (Currently Amended) A polyurethane (A) prepared from reactants comprising consisting essentially of:

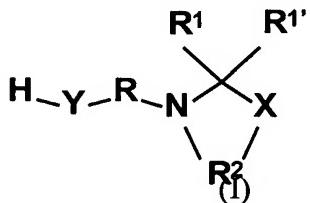
- a) at least one (cyclo)aliphatic organic diisocyanate or polyisocyanate,
- b) at least one compound comprising at least one isocyanate-reactive group and at least one free radically polymerizable unsaturated group and/or cationically polymerizable group,
- c) at least one compound comprising at least one isocyanate-reactive group and at least one capped amino group and having a molecular weight below 1000 g/mol,
- d) ~~if desired optionally~~, at least one compound comprising at least one isocyanate-reactive group and at least one actively dispersing group, and
- e) ~~no compound containing at least two isocyanate reactive groups, and~~
- f) ~~if desired optionally~~, compounds other than a) to d) comprising at least one isocyanate-reactive group

Claim 4. (Currently Amended) The polyurethane (A) according to claim 1, wherein synthesis component c) has a molecular weight below 750 g/mol.

Claim 5. (Previously Presented) The polyurethane according to claim 1, comprising per 100 g of compound at least 0.01 mol of unsaturated free radically or cationically polymerizable groups and/or at least 0.01 mol of capped amino groups.

Claim 6. (Previously Presented) The polyurethane according to claim 1, wherein said at least one capped amino group is selected from the group consisting of open-chain aminals, cyclic aminals, ketimines, aldimines, N,O-acetals, N,O-ketals, carboxamides, sulfonamides, and amidines.

Claim 7. (Currently Amended) The polyurethane according to claim 1, wherein component c) has the formula (I)



where

R and R² independently are each a divalent organic aliphatic, cycloaliphatic or aromatic radical comprising 2 to 20 carbon atoms which is unsubstituted or substituted by functional groups, aryl, alkyl, aryloxy, alkyloxy, halogen, heteroatoms and/or heterocycles[.,.];

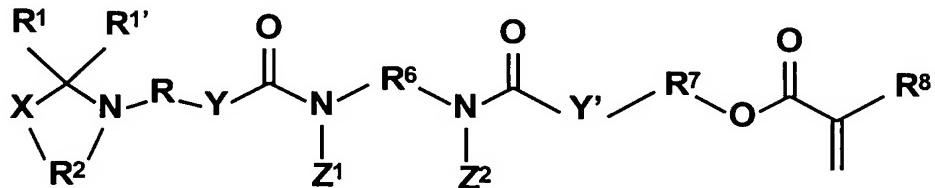
R¹ and R^{1'} independently are each hydrogen, C₁–C₁₈ alkyl, C₂–C₁₈ alkyl which is uninterrupted or interrupted by one or more oxygen and/or sulfur atoms and/or by one or more substituted or unsubstituted imino groups, or is C₆–C₁₂ aryl, C₅–C₁₂ cycloalkyl or a five- or six-membered heterocycle containing oxygen, nitrogen and/or sulfur atoms, and each of said radicals ~~to be~~ optionally being substituted by functional groups, aryl, alkyl, aryloxy, alkyloxy, halogen, heteroatoms and/or heterocycles[[,]]:

X is oxygen (-O-), unsubstituted or monosubstituted nitrogen (-N(R⁴)-) or >N-NR⁴R⁵[[,]];:

Y is oxygen (-O-), unsubstituted nitrogen (-N(H)-) or sulfur (-S-)[[,]]; and

R⁴ and R⁵ independently are each hydrogen or C₁–C₄ alkyl.

Claim 8. (Currently Amended) The polyurethane according to claim 1, comprising at least one of the following compounds of the formula (II)



~~or higher homologs thereof,~~

~~wherein~~ wherein

R and R² independently are each a divalent organic aliphatic, cycloaliphatic or aromatic radical containing 2 to 20 carbon atoms and unsubstituted or substituted by functional groups, aryl, alkyl, aryloxy, alkyloxy, halogen, heteroatoms and/or heterocycles[[,]];:

R¹ and R^{1'} independently are each hydrogen, C₁-C₁₈-alkyl, C₂-C₁₈-alkyl which is uninterrupted or interrupted by one or more oxygen and/or sulfur atoms and/or by one or more substituted or unsubstituted imino groups, or are each C₆-C₁₂-aryl, C₅-C₁₂-cycloalkyl or a five- or six-membered heterocycle containing oxygen, nitrogen and/or sulfur atoms, ~~it being possible for~~ and each of said radicals to be optionally being substituted by functional groups, aryl, alkyl, aryloxy, alkyloxy, halogen, heteroatoms and/or heterocycles[[,]];:

X is oxygen (-O-), unsubstituted or monosubstituted nitrogen (-N(R⁴)-) or >N-NR⁴R⁵[[,]];:

Y is oxygen (-O-), unsubstituted nitrogen (-N(H)-) or sulfur[[,]];:

Y' ~~is the same as or can be defined for Y but can also be different from Y~~[[,]];:

R⁶ and R⁷ each independently are a divalent organic aliphatic, cycloaliphatic or aromatic radical containing 2 to 20 carbon atoms and unsubstituted or substituted by functional groups, aryl, alkyl, aryloxy, alkyloxy, halogen, heteroatoms and/or heterocycles[[,]];:

R⁸ is hydrogen, methyl, ethyl or hydroxymethyl, and

Z¹ and Z² ~~can be~~ are identical or different and independently of one another are hydrogen or -(CO)-NH-R⁶-NCO.

Claim 9. (Currently Amended) A polyurethane dispersion, comprising:

(A) a polyurethane according to claim 1 and comprising component d),

(C) ~~if desired~~ optionally, one or more photochemically and/or thermally ~~activable~~ activatable initiators, and

(D) ~~if desired~~ optionally, further typical coatings additives.

Claim 10. (Currently Amended) A coating composition, comprising:

said polyurethane dispersion according to claim 9, and

(C) ~~if desired~~ optionally, one or more photochemically and/or thermally activatable activatable initiators, and

(D) ~~if desired~~ optionally, further typical coatings additives.

Claim 11. (Currently Amended) A method of coating a substrate, which comprises:

radiation curing a substrate coated with said polyurethane as claimed in claim 1, and

~~thermally treatment~~ heating the applied polyurethane at ~~a~~ temperatures up to 160° C.

Claim 12. (Currently Amended) The method according to claim 11, wherein said ~~thermally treating takes place between temperature ranges from 60 and to~~ 160° C.

Claim 13. (Previously Presented) The method according to claim 11, wherein the radiation curing is conducted under inert gas.

Claim 14. (Previously Presented) A radiation-curable coating composition comprising said polyurethane according to claim 1.

Claim 15. (Currently Amended) A method for coating wood, metal or plastic, said method, comprising:

coating said wood, metal or plastic with said polyurethane according to claim 1.

Claim 16. (Currently Amended) ~~an~~ An automotive paint or automotive topcoat material comprising said polyurethane as claimed in claim 1.

- Claim 17. (Currently Amended) A coating composition, comprising:
- said polyurethane (A) according to claim 1 and
- (C) ~~if desired~~ optionally, one or more photochemically and/or thermally
~~activable~~ activatable initiators, and
- (D) ~~if desired~~ optionally, further, ~~typical~~ additives.

Claim 18. (Currently Amended) A method for coating wood, metal or plastic, said method, comprising:

coating said wood, metal or plastic with said polyurethane dispersion according to claim 9.